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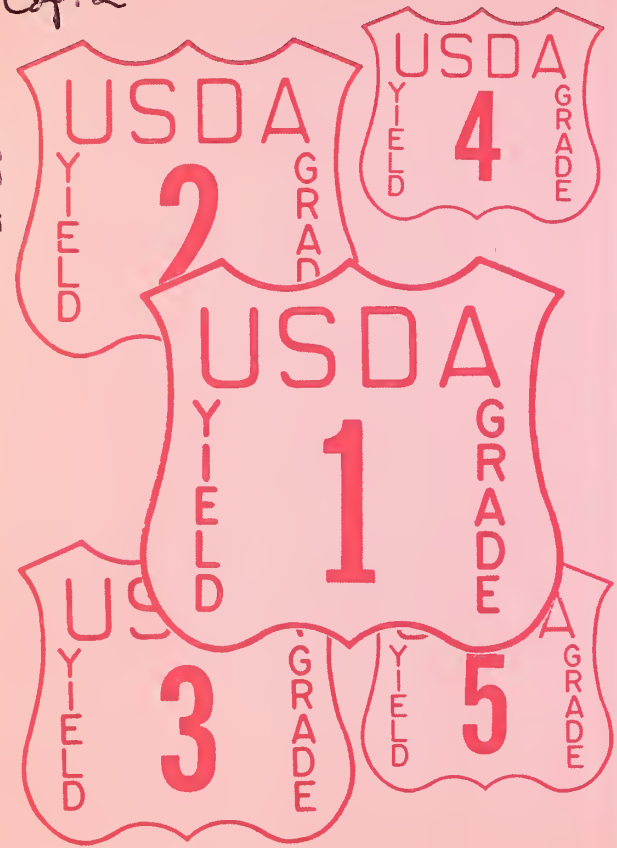

USDA YIELD GRADES
FOR LAMB

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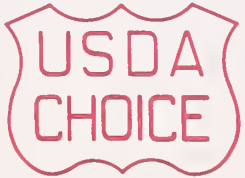
INTRODUCTION

The value of a lamb carcass depends chiefly upon two factors—the quality of the lean and the quantity of retail cuts the carcass will yield.

USDA quality grades for lamb are Prime, Choice, Good, Utility, and Cull*. These grades are reliable nationwide guides to lamb eating quality—tenderness, juiciness, and flavor. USDA has conducted a voluntary grading service for lamb since 1931.

USDA yield grades for lamb have been available for industry use since March 1, 1969**. They provide a nationally uniform method of identifying carcasses for differences in "cutability"—specifically, the yields of closely trimmed, boneless, retail cuts from the leg, loin, hotel rack, and shoulder.

The five USDA yield grades are numbered 1 through 5. Yield Grade 1 carcasses have the highest yields of retail cuts; Yield Grade 5, the lowest. A carcass which is typical of its yield grade would be expected to yield 3.5 percent more in total retail cuts than the next lower yield grade, when USDA cutting



*The same quality grades are also used in grading yearling mutton and mutton—except that mutton is not eligible for Prime.

**Yearling mutton and mutton carcasses also may be yield graded.

and trimming methods are followed. (Other cutting and trimming methods may result in different yields —but if a method is applied uniformly it should result in similar differences in yields between grades.)

At December 1969 prices, differences in yields of meat between carcasses a full yield grade apart made a value difference of about $3.70 per hundredweight.

Grades for live animals—slaughter lambs, yearlings, and sheep—are directly related to the quality and yield grades of the carcasses they will produce. So, as quality grades for slaughter animals have long been a major factor in determining their sales value, now their yield grade also may be evaluated and given appropriate consideration.

When used in conjunction with quality grades, yield grades can benefit all segments of the sheep industry.

- *For the producer*—They provide a means to identify breeding and slaughter animals for differences in yields of salable meat. When the value differences associated with yield grades are reflected in prices to producers this will encourage producers to produce high-yielding, high-quality lambs.
- *For the packer*—They can help him evaluate more precisely differences in value among the animals he buys and the meat he sells.
- *For the retailer*—They provide a means for purchasing lamb with assurance as to its yield of retail cuts, and therefore, its value.
- *For the consumer*—They provide an indirect means for reflecting consumer preferences for lamb—thick muscling, a minimum of excess fat, and a high-quality lean—back through the marketing channel to retailers, packers, feeders, and producers. This could result in better values for consumers.

This booklet explains how yield grades can benefit everyone concerned with lamb and mutton, from producer to consumer. For copies of the official standards for grades of lamb, yearling mutton, and mutton carcasses and slaughter lambs, yearlings, and sheep, write the Livestock Division, Consumer and Marketing Service, U.S. Department of Agriculture, Washington, D. C. 20250.

BEHIND THE YIELD GRADE MARK

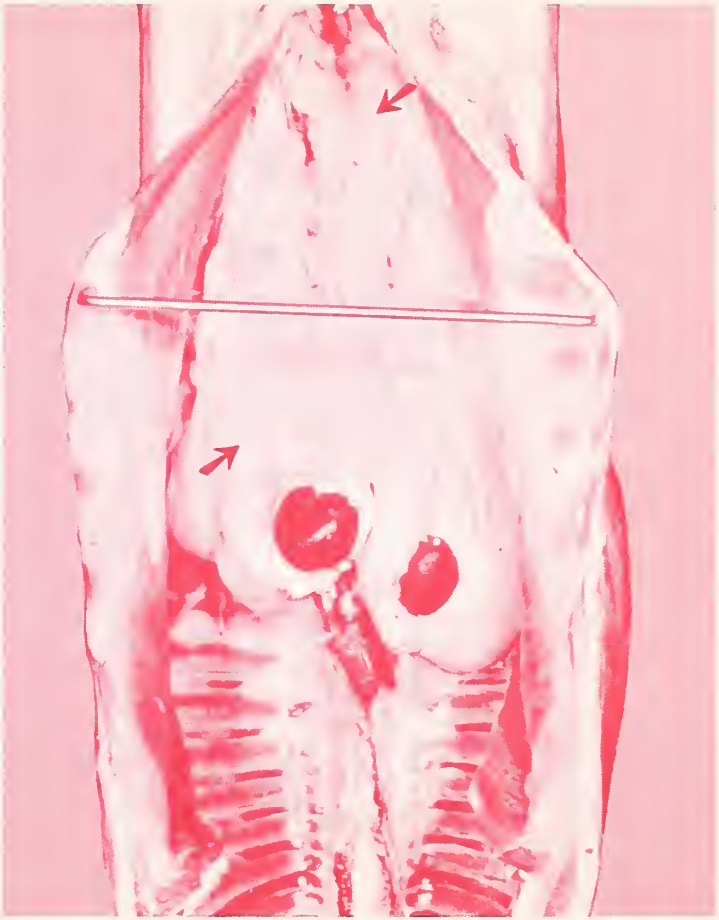
Variations in yields of retail cuts among carcasses are accounted for chiefly by two considerations: (1) the amount of fat that must be trimmed from the carcass in making retail cuts, and (2) the thickness and fullness of muscling. Indicators of these are the three factors on which the yield grades are based: (1) the amount of external fat, (2) the amount of kidney and pelvic fat, and (3) the conformation grade of the legs.

External Fat

The amount of external fat is the most important yield grade factor since it is a good indicator of the amount of fat that is trimmed in making retail cuts. The amount of external fat is evaluated in terms of its thickness over the center of the ribeye muscle between the 12th and 13th ribs. In grading, this fat thickness can be estimated accurately. It also can be measured. On intact carcasses the measurement is made by probing at a spot approximately 1½ inches from the middle

Figure 1

Figure 2
(Photo courtesy of National Livestock and Meat Board)



of the backbone between the 12th and 13th ribs, as illustrated in Figure 1.

The grader may adjust the fat thickness measurement, if necessary, to reflect unusual amounts of fat on other parts of the carcass. If all other factors are equal, each 0.15 inch change in fat thickness over the ribeye makes a full yield grade change.

Kidney and Pelvic Fat

Fat on the inside of the carcass around the kidneys and in the pelvic area is normally left in the carcass at time of slaughter. However, since most of this fat is removed in making retail cuts, increases in these fats decrease the yields of cuts.

The amount of kidney and pelvic fat is evaluated subjectively and expressed as a percentage of the carcass weight. All other factors being equal, a change of 4 percent of the carcass weight in kidney and pelvic fat makes a full yield grade change. Figure 2 shows the kidney and pelvic fat.

Figure 3
(Photos courtesy of National Livestock and Meat Board)

Leg Conformation

USDA studies have shown that among lambs of the same degree of fatness those that have higher leg conformation grades have higher yields of retail cuts. The leg conformation grade is evaluated on the basis of the descriptions in the quality grade standards. A change of one-third of a grade alters the yield grade by 5 percent of a grade. Figure 3 shows views of legs having conformation grades of average Prime, average Choice and average Good.

YIELD GRADES FOR CUTS, TOO

Yield grade descriptions apply primarily to carcasses, but the yield grade standards are also applicable to the grading of sides, foresaddles, hindsaddles, forequarters, hindquarters, hotel racks, loins, and combinations of regular or trimmed wholesale cuts which include either the hotel rack or loin.

YIELD GRADES BENEFIT THE PRODUCER

Evaluating slaughter lambs in terms of their yield grade is very useful in appraising their value. These grades provide a basis for pricing both slaughter lambs and carcasses in relation to their yield of salable meat to the consumer. They serve as guides to aid lamb producers and feeders in their efforts to produce the "consumer-preferred lamb." When producers receive payment for their lambs in line with the value differences associated with yield grades, this will encourage the production of a meatier, less-wasty type of lamb, and result in greater acceptability and improved demand for lamb.

Lambs having a high yield of retail cuts are thickly muscled with very little fat. Those that are very fat and thinly muscled have a low yield of retail cuts. Since fatness and muscling have opposite effects on yields of cuts, evaluating live animals for yield grade requires an ability to make separate, accurate evaluations of those two factors.

Because the fleece interferes with visual appraisal, accurate determination of the grade (quality or yield) of a slaughter lamb usually requires handling in addition to observation.

In appraising slaughter lambs for yield grade, two factors are considered: (1) degree of fatness, and (2) leg conformation. Variations in fatness are much more important than variations in leg conformation.

The overall fatness of an animal can be determined best by giving particular attention to those parts on which fat is deposited at a faster-than-average rate. These include the back, loin, rump, flank, cod or udder, and brisket. As lambs increase in fatness, these parts become progressively fuller, thicker, and more distended in relation to the thickness and fullness of the other parts, particularly the legs.

Since an animal's thickness of muscling also affects the development of its various parts, this also needs to be considered when evaluating the degree of fatness. In thinly muscled lambs with a high degree of finish, the width of the back usually will be greater than the width through the center of the legs. Conversely, in thickly muscled lambs with a low degree of finish, the

(Photos courtesy of Texas A&M University)

Figure 4

thickness through the legs will be greater than through the back and the back will be full and rounded.

Two lambs of the same quality grade—Choice—but differing widely in their yield of lean meat are shown in these pictures. Lamb A, shown in Figure 4, is a Yield Grade 2 and Lamb B (Figure 5) is a Yield Grade 4. Lamb A combines thick muscling and a small amount of fat. It will produce a carcass with a high yield of retail cuts and have a high proportion of lean to bone. In contrast, Lamb B combines thin muscling and a high degree of fatness and will have a low proportion of lean

(Photos courtesy of Texas A&M University)

Figure 5

to bone. Its carcass would provide a much lower yield of retail cuts.

In the rear views, notice that the legs of Lamb A are thicker and plumper than Lamb B's. Now compare their widths of back with the widths through the middle of their legs. In Lamb A, the width through the legs is slightly greater than through the back. Lamb B, however, is wider over the back than through the legs. Notice, also, the wellrounded back of Lamb A and compare it with Lamb B's flatter and wider back. Now compare the side views. Notice Lamb A's greater width in the lower leg—its plumper and thicker fore-

Figure 6
Far left: Back view
Left: Cross section view
Lower left: Inside view

(Photos courtesy of National Livestock and Meat Board)
Yield Grade 2 (2.6)
External fat thickness—0.15 inch
Leg conformation grade—high Choice
Kidney and pelvic fat—2.0 percent

arm—also that it has less fullness in the flank. In handling, the backbone and ribs of Lamb A were more readily discernible than Lamb B's. These are all signs that Lamb A has less fat and is more thickly muscled than Lamb B.

The photos on these two pages show views of Yield Grade 2 (Figure 6) and Yield Grade 4 (Figure 7) lamb carcasses. The Yield Grade 2 carcass weighed 47 pounds. Notice that the legs tend to be moderately plump and full (back view). Also, note the thin layer of fat over the back and loin and that the muscles over the top of the shoulders and on the outside of the legs are slightly visible. The cross section view was taken at the 12th rib—where carcasses are separated into fore-

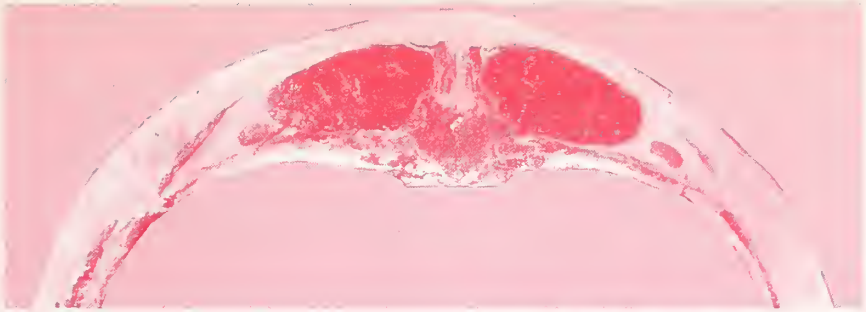


Figure 7

Right: Cross section view
Lower right: Inside view
Far right: Back view

(Photos courtesy of National Livestock and Meat Board)

Yield Grade 4 (4.6)
External fat thiskness—0.35 inch
Leg conformation grade—low Choice
Kidney and pelvic fat—4.5 percent

saddles and hindsaddles. This is the point where external fat thickness is measured (over the center of the ribeye muscle). In this carcass the fat measures 0.15 inch in thickness. The amount of kidney and pelvic fat is also an important yield grade factor. The inside view shows the amount of these fats in this carcass. It was estimated at 2.0 percent of the carcass weight.

The Yield Grade 4 carcass has a slightly thick covering of fat over the ribeye, measuring 0.35 inch (cross section view, Figure 7). Note that this 48–pound carcass (back view) is nearly completely covered with fat and the legs tend to be only slightly plump and full. The amount of kidney and pelvic fat (inside view) in this carcass was estimated at 4.5 percent of its weight.

YIELD GRADES BENEFIT THE RETAILER

Retailers are accustomed to USDA quality grades as a consistent guide to lamb quality. But this guide is no longer enough. Consumers' increasing aversion to fat on meat is forcing retailers to trim increasingly more fat from retail cuts, or risk reduced acceptance of product. And since lamb carcasses of the same weight and quality grade vary considerably in fatness and muscling—and therefore in yield of cuts and value—retailers need a means of purchasing which will assure close control of cutability.

To provide this, some retailers have developed specifications for the kind of lamb carcasses they want and restrict their purchases to that kind. This approach is not always satisfactory because the specifications may not insure the cutability control desired. It also may require selection of individual carcasses by the purchaser prior to delivery or the rejection of sizable numbers of carcasses at time of delivery—either of which is quite costly. This approach also restricts purchases to a particular kind of carcass, thereby narrowing the range of acceptance within a quality grade and limiting the available supply.

With USDA yield grades, retailers have a readily available means of buying lamb with assurance as to its yield of retail cuts. Knowing the difference in retail sales value between carcasses of different yield grades will allow retailers to buy carcasses at prices commensurate with their yield grades. If prices are not consistent with yield grade values they can determine the best buy.

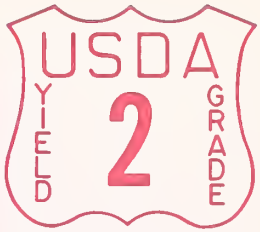
The higher yield grades are not necessarily a bargain. The best buy depends on the price at which lambs of each yield grade can be purchased. In buying, a retailer should consider prices for carcasses of each of the five yield grades in relation to their actual retail sales value.

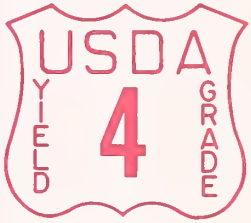
An example of how a retailer might utilize yield grades in the procurement of lamb carcasses is illustrated by the table on page 13. The first two columns in that table show the yields of retail cuts of carcasses typical of Yield Grade 2 and Yield Grade 4—two full grades apart. (These yields are based on the style of cutting used by USDA in developing the yield grades.) Then, based on December 1969 prices for Choice grade cuts, the last two columns show the corresponding retail sales values for these two grades. Note that a dif-

TABLE 1 COMPARISON OF YIELD* OF RETAIL CUTS AND RETAIL SALES VALUES BETWEEN USDA YIELD GRADE 2 AND YIELD GRADE 4 CARCASSES

Closely Trimmed Retail Cuts	Percent of Carcass Weight		Price Per Pound**	Retail Sales Value In Dollars Per Cwt.	
	Yield Grade 2	Yield Grade 4		Yield Grade 2	Yield Grade 4
Leg, short cut	22.2	19.4	$1.00	$22.20	$19.40
Sirloin	6.4	5.8	1.50	9.60	8.70
Short loin	10.1	9.5	1.83	18.48	17.38
Rack	7.9	7.5	1.61	12.72	12.08
Shoulder	23.8	21.6	.93	22.14	20.09
Neck	2.1	1.9	.51	1.07	0.97
Breast	9.8	9.8	.39	3.82	3.82
Foreshank	3.4	3.2	.62	2.11	1.99
Flank (boneless stew)	2.3	2.3	.84	1.93	1.93
Kidney	0.5	0.5	.65	.32	.32
Fat	8.2	15.4	.02	.16	.31
Bone	3.3	3.1	.01	.03	.03
Total	100.0	100.0		$94.58	$87.02

Difference in retail sales value per cwt. between Yield Grade 2 and 4—$7.56





*Cuts trimmed to 1/4 inch of fat.

**Average retail prices for December 1969 (including sale priced items) as furnished by a large number of selected retailers throughout the country.

ference of two yield grades made a retail sales value difference of $7.56 per hundredweight. For one full yield grade, this meant a retail sales value difference of $3.78 per hundredweight.

In applying the information in Table 1 to an actual operation, however, a retailer should remember (1) that his cutting procedures may result in different yields of the various cuts than shown in the table and (2) that between lamb carcasses furnished to him, there may not be a full yield grade difference—on the average—between the adjacent yield grades (i.e., between 2's and 3's or 3's and 4's). Therefore, a retailer should conduct his own cutting and merchandising tests on lamb carcasses of the different yield grades as received and, from these, determine his own price differentials.

YIELD GRADES BENEFIT THE PACKER

The USDA yield grades provide packers a means of precisely identifying slaughter lambs and lamb carcasses for differences in cutability.

When lamb carcasses are sold on the basis of USDA quality grades, most meat buyers' complaints are based on carcasses having excess fat. These complaints could largely be eliminated through use of USDA yield grades. By using both quality and yield grades as a basis for marketing his lambs, a packer can sell on a nationwide market and have nearly complete assurance that his lambs will meet with the buyer's approval.

Packers can also make use of yield grades in their buying operations by applying the principles of evaluating live animals for fatness and muscling. Yield grades furnish a packer the opportunity to increase his profits through (1) greater precision in buying lambs and in selling carcasses more nearly in line with their real value, and (2) concentration on the slaughter of the kinds that he can sell for the most profit.

YIELD GRADES BENEFIT THE CONSUMER

Yield grades provide a means for reflecting consumer preferences for lamb back through the marketing channel to packers, feeders, and producers. They can be effective in eliminating much of the waste now present in the production and marketing of lamb. It costs money to put excess fat on lamb—and it costs money to ship this excess fat around the country.

Thus, the use of yield grades to identify strains of sheep and production methods which produce thickly muscled, high-quality lamb with a minimum of waste fat can help bring about savings. And the savings may mean better values for consumers and greater returns for producers.

Many consumers who own home freezers also regularly buy lamb carcasses. For these consumers, USDA yield grades offer the same advantages as they do to retailers.

YIELD GRADE—SYMBOL OF VALUE

USDA yield grades provide an additional marketing tool for use by all who buy or sell live lambs and lamb carcasses. They are a means of identifying one of the important value-determining characteristics—the proportion of the carcass that can be sold as trimmed retail cuts.

Used in conjunction with quality grades, yield grades enable sellers and buyers to arrive at prices commensurate with value. This results in greater marketing efficiency and assurance that consumers' preferences are relayed back through the marketing channels to the producer. That is where basic changes to improve our lambs must originate.

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